

## Enzyme Pre-Lab

The data table below shows data for you to practice graphing your real data & analyzing it.

	Baseline (1x, pH 7)	2x enzyme	½ enzyme	2x substrate	½ substrate	¼ substrate	Low pH 4	High pH 10	NaCl
Time (s)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)	Abs. (nm)
<b>30</b>	<b>.010</b>	<b>.030</b>	<b>.002</b>	<b>.013</b>	<b>.008</b>	<b>.006</b>	<b>.015</b>	<b>.001</b>	<b>.000</b>
60	.015	.045	.004	.029	.012	.008	.030	.003	.000
90	.020	.060	.007	.039	.018	.012	.039	.005	.000
<b>120</b>	<b>.025</b>	<b>.075</b>	<b>.012</b>	<b>.029</b>	<b>.023</b>	<b>.017</b>	<b>.040</b>	<b>.008</b>	<b>.000</b>
150	.030	.090	.020	.043	.025	.021	.045	.009	.000
180	.035	.105	.023	.045	.030	.028	.045	.011	.000
210	.040	.120	.026	.045	.035	.030	.045	.013	.000
240	.045	.135	.028	.045	.040	.037	.045	.015	.000
270	.045	.135	.028	.045	.045	.041	.045	.016	.000
300	.045	.135	.028	.045	.045	.045	.045	.017	.000
Rate between time 30s-120s	1.75e-4 nm/s	5.0e-4 nm/s	1.1e-4 nm/s	1.76e-4 nm/s	1.65e-4 nm/s	1.12e-4 nm/s	2.8e-4 nm/s	7.8e-5 nm/s	0.0 nm/s

Generate **2 graphs**:

1. **Baseline & 3 other substrate concentrations** *as a function of* **time** (4 lines on single graph)
2. **Enzyme rate** *as a function of* **substrate concentration** (1 line)

## Graphs

Figure 1: Substrate concentration as a function of time.

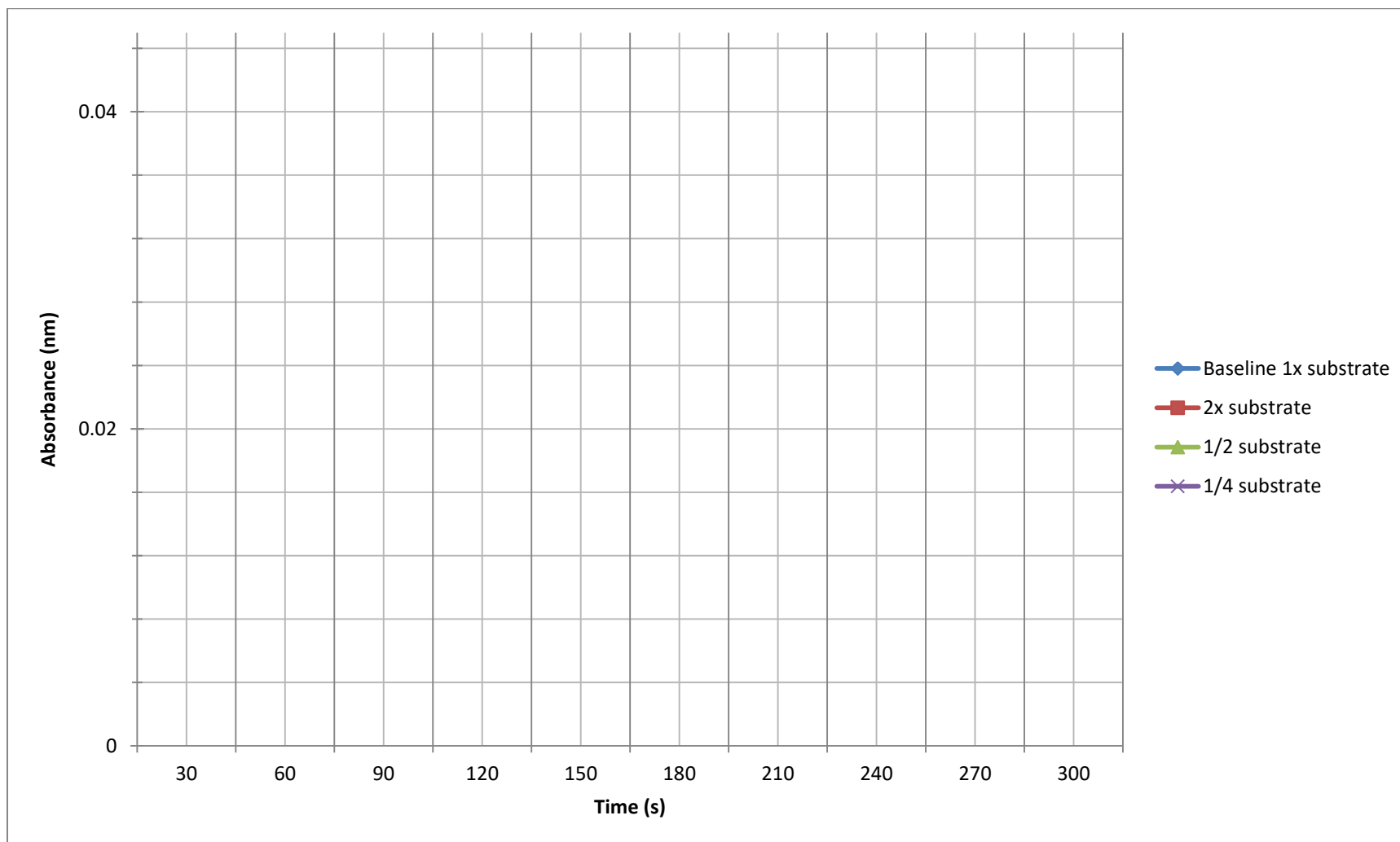
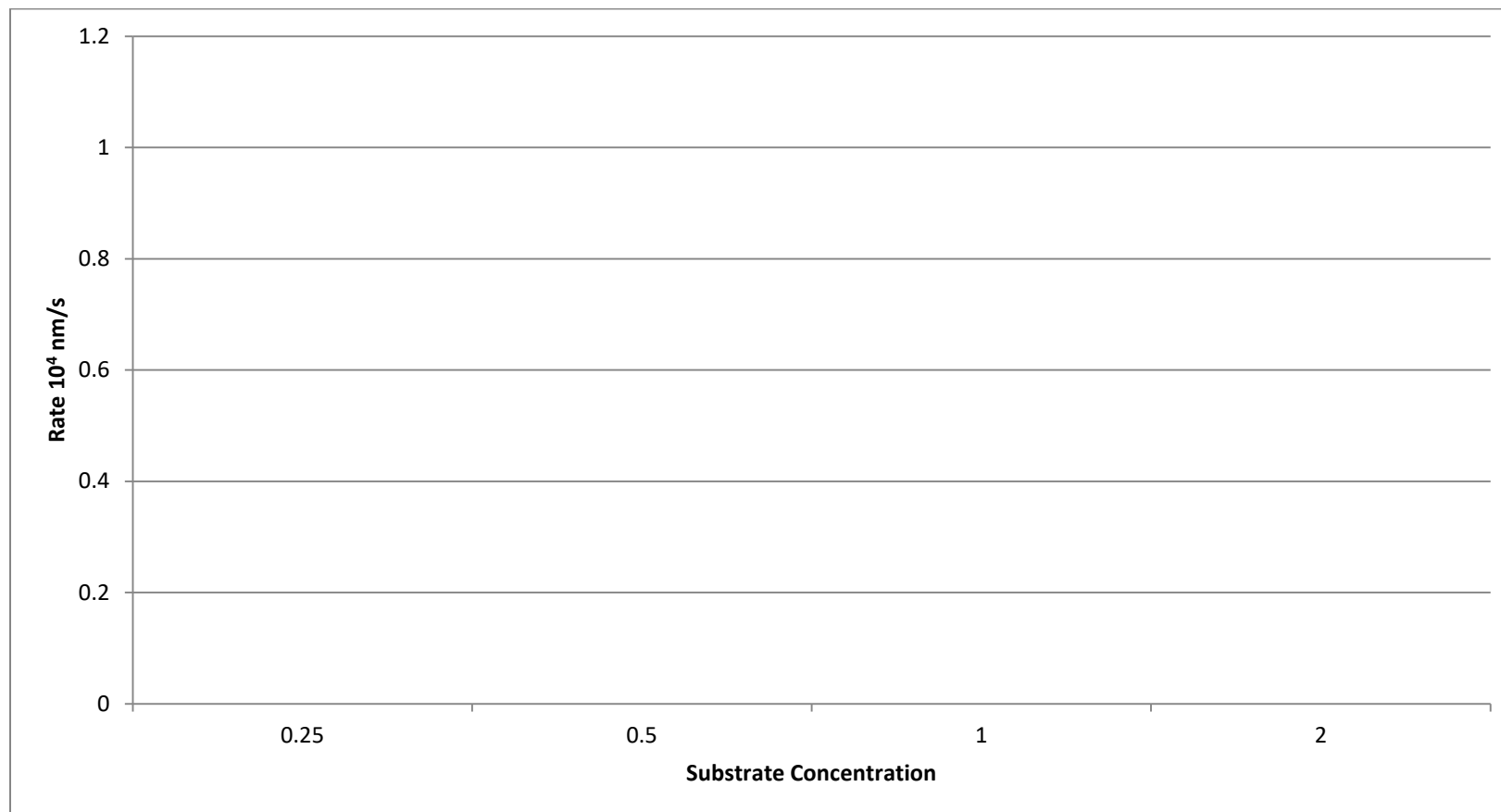


Figure 2: Enzyme rate as a function of substrate concentration.



### Analysis Practice

1. Why does the rate slow down after a certain point during an enzyme-catalyzed reaction?
2. Why does adding more enzyme significantly increase the reaction rate but adding more substrate does not significantly increase the reaction rate?
3. Describe & explain the results for increasing substrate concentration over time. Be sure to explain in terms of the molecular interactions.
4. Using the data, describe the effects of the 2 different pH levels compared to the baseline pH, and the effects of salt.